

Industrial Gases



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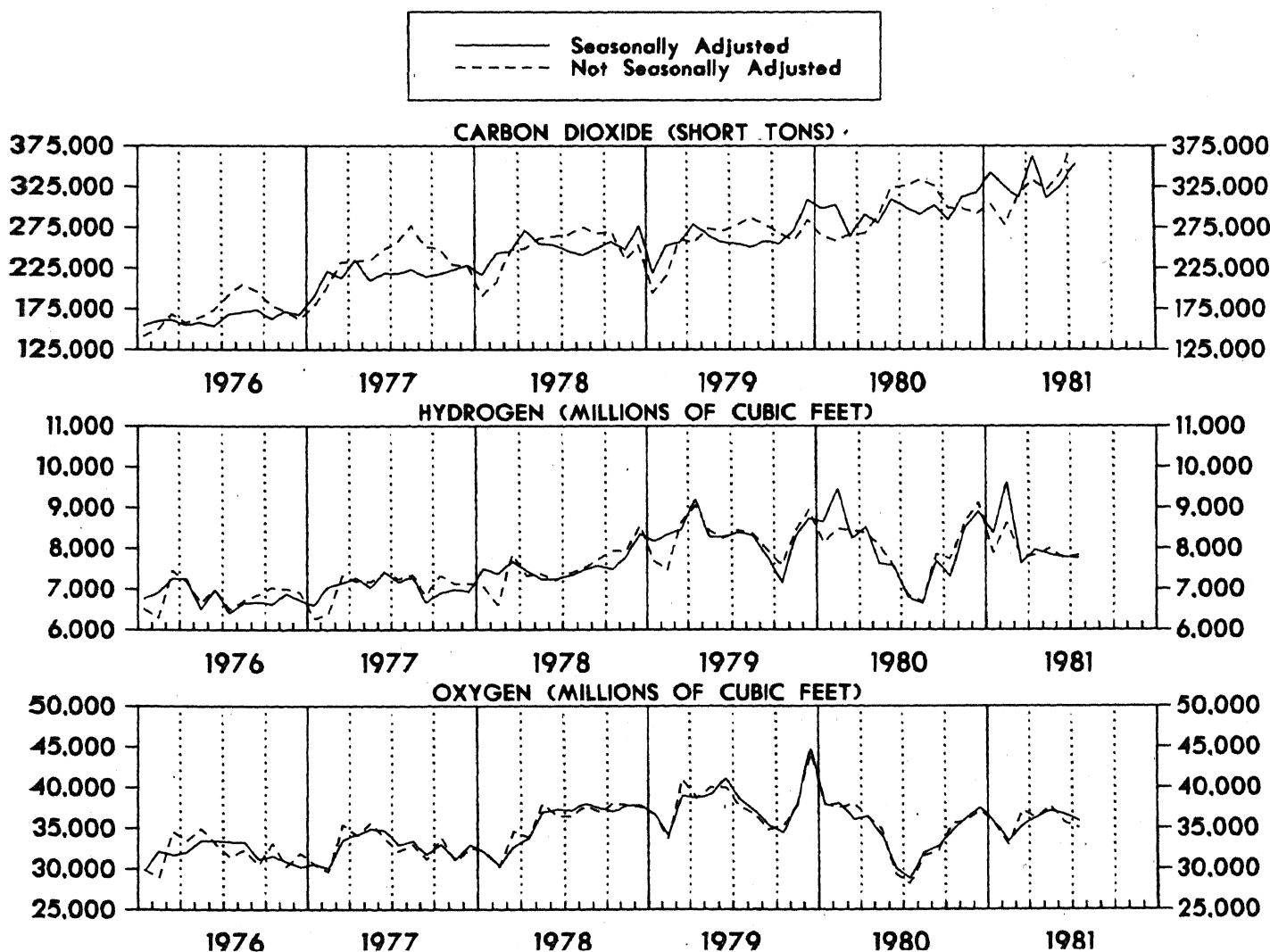
JULY 1981

M28C(81)-7
Issued September 1981

The statistics in this publication are based on a survey of manufacturers and represent total U.S. production of industrial gases. Estimates are included for companies whose reports were

not received in time for tabulation. A more complete description of this survey appears on page 4.

PRODUCTION OF SELECTED INDUSTRIAL GASES 1976 TO 1981



Address inquiries concerning these figures to U.S. Department of Commerce, Bureau of the Census, Industry Division, Washington, D.C. 20233, or call Michael Kavros, (301) 763-7838.

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Table 1A. SUMMARY OF PRODUCTION OF PRINCIPAL GASES, SEASONALLY ADJUSTED: 1979 TO 1981

Month and year	Acetylene (28132 00) (mil. cu. ft.)	Carbon dioxide (28133 01, 28133 02, and 28133 31) (short tons)	Hydrogen, high and low purity (100%) (28137 20) (mil. cu. ft.)	Nitrogen, high and low purity (100%) (28135 00) (mil. cu. ft.)	Oxygen, high and low purity (100%) (28136 00) (mil. cu. ft.)
1981					
July.....	408	352,874	7,773	40,790	35,858
June.....	396	326,310	7,795	41,731	36,680
May.....	407	311,255	7,853	41,139	37,110
April.....	452	362,173	7,969	40,786	36,281
March.....	472	312,143	7,630	39,892	35,317
February.....	462	325,086	9,613	40,682	33,384
January.....	523	342,354	8,373	39,397	35,675
1980					
December.....	488	317,390	8,897	42,281	37,470
November.....	385	312,663	8,488	44,236	36,110
October.....	491	283,712	7,295	44,482	34,662
September.....	448	301,994	7,688	40,471	32,676
August.....	413	291,090	6,645	34,644	32,021
July.....	399	299,112	6,791	37,606	28,826
June.....	441	309,028	7,569	35,844	30,080
May.....	446	280,120	7,937	39,457	34,131
April.....	518	290,657	8,510	39,051	36,456
March.....	535	263,643	8,243	38,297	36,076
February.....	552	302,280	9,447	41,290	38,038
January.....	540	298,448	8,646	37,533	37,835
1979					
December.....	439	311,071	8,728	47,349	44,682
November.....	494	273,829	8,304	39,602	37,891
October.....	491	257,105	7,150	34,388	34,466
September.....	448	261,077	7,792	33,085	35,357
August.....	466	252,864	8,318	34,753	37,193
July.....	492	257,951	8,387	33,842	38,565
June.....	494	259,826	8,287	34,425	41,115

Table 1B. SUMMARY OF PRODUCTION OF PRINCIPAL GASES, NOT SEASONALLY ADJUSTED: 1979 TO 1981

Month and year	Acetylene (28132 00) (mil. cu. ft.)	Carbon dioxide, liquid and gas (28133 01 and 28133 02) (short tons)	Carbon dioxide, solid (28133 31) (short tons)	Hydrogen, high and low purity (100%) (28137 20) (mil. cu. ft.)	Nitrogen, high and low purity (100%) (28135 00) (mil. cu. ft.)	Oxygen, high and low purity (100%) (28136 00) (mil. cu. ft.)
1981						
July.....	390	347,229	36,698	7,835	40,586	35,033
June.....	394	309,322	33,303	7,748	40,396	35,726
May.....	404	290,467	30,437	7,994	41,797	37,964
April.....	419	304,217	29,344	7,824	40,052	36,281
March.....	451	291,583	24,618	7,805	41,248	37,153
February.....	438	255,415	22,534	8,623	38,322	32,983
January.....	509	277,293	26,375	7,879	40,146	35,675
1980						
December.....	504	264,418	27,581	9,119	41,900	37,095
November.....	405	267,937	30,031	8,632	43,483	35,966
October.....	506	261,855	36,610	7,740	43,459	35,529
September.....	483	286,465	39,386	7,857	40,552	32,186
August.....	429	295,473	38,116	6,678	35,649	31,637
July.....	382	286,188	39,246	6,845	37,418	28,163
June.....	439	286,192	38,287	7,524	35,665	29,298
May.....	443	258,653	30,151	8,080	40,088	34,916
April.....	481	240,017	27,678	8,365	38,348	36,456
March.....	511	238,304	28,766	8,433	39,599	37,952
February.....	524	233,182	25,267	8,474	38,895	37,582
January.....	526	236,413	28,310	8,136	38,266	37,835
1979						
December.....	454	253,772	30,028	8,946	46,923	44,235
November.....	521	227,365	31,123	8,445	38,929	37,739
October.....	506	233,570	34,190	7,586	35,179	35,328
September.....	482	238,995	39,566	7,963	33,151	34,827
August.....	485	248,614	38,140	8,360	35,761	36,747
July.....	471	239,054	38,538	8,454	33,673	37,678
June.....	492	236,650	33,507	8,237	33,323	40,046

Table 2. PRIMARY PRODUCTION (QUANTITY) OF SPECIFIED INDUSTRIAL GASES

Product code	Chemical and basis	Unit of measure	July 1981	June 1981	July 1980
28132 00	Acetylene ¹	Mil. cu. ft.....	390	394	382
	Produced for compression, including cylinder and pipeline.....	..do.....	^a 104	^a 112	112
	Produced for pipeline shipment (excluding that shipped to be compressed) and for consumption in this plant.....	..do.....	286	282	270
28133 01	Carbon dioxide:				
	Gas ²	S. tons.....	^a 44,543	^a 43,183	42,565
28133 02	Liquid ².....	..do.....	302,686	266,139	243,623
28133 31	Solid (dry ice).....	..do.....	36,698	^a 33,303	39,246
28137 15	Argon, high purity:				
	Produced for cylinder and bulk delivery and pipeline shipments, and for consumption.....	Mil. cu. ft.....	660	660	493
28137 20	Hydrogen ³.....	..do.....	7,835	7,748	6,845
	Liquid and gas:				
	Produced for cylinder and bulk delivery shipment.....	..do.....	1,043	973	863
	Produced for pipeline shipment and Government use.....	..do.....	2,650	2,646	2,476
	Produced for consumption in this plant.....	..do.....	4,142	4,129	3,506
28135 00	Nitrogen ⁴.....	..do.....	40,586	40,396	37,418
	Gas:				
	Produced for pipeline shipment.....	..do.....	24,901	25,258	24,196
	Produced for consumption in this plant.....	..do.....	3,296	3,415	3,061
	Liquid:				
	Produced for bulk delivery shipment to pipelines or to air separation plants.....	..do.....	1,053	1,209	856
	Produced for consumption in this plant.....	..do.....			273
	Liquid and gas:				
	Produced for cylinder and bulk delivery shipment.....	..do.....	11,336	10,514	9,032
28136 00	Oxygen.....	..do.....	35,033	35,726	28,163
	Gas:				
	Produced for pipeline shipment.....	..do.....	25,499	25,502	19,371
	Liquid:				
	Produced for bulk shipment to pipeline or to other air separation plants.....	..do.....	657	688	870
	Liquid and gas:				
	Produced for cylinder and bulk delivery shipment.....	..do.....	6,032	5,822	4,608
	Produced for consumption in this plant.....	..do.....	2,845	3,714	3,314

^aOver 25 percent of this item has been estimated.^rRevised by over 5 percent from previously published figures.¹Excludes quantities of acetylene produced and consumed by railroad shops, shipyards, and small establishments using portable generators.²Excludes quantities produced and consumed in plants manufacturing soda ash or urea.³Excludes quantities produced and consumed in the manufacture of methanol and ammonia, but includes an unspecified amount of hydrogen produced for sale or interplant transfer to plants consuming this gas in the production of ammonia. Also excludes amounts of hydrogen produced in petroleum refineries for captive use.⁴Excludes amounts produced and used in the manufacture of ammonia and ammonia derivatives.

Table 3. PRODUCTION AND EXPORTS OF NITROGEN: JUNE 1981

Product code	Product	Quantity produced (m.c.f.)	Exports of domestic merchandise (m.c.f.)	Percent of exports to production
28135 00	Nitrogen.....	40,396	1,184	2.9

Note: Detailed export data for industrial gases other than nitrogen are not available separately. Import data for industrial gases are included in "chemical elements, not specially provided for," and are not separately identified.

Comparison of SIC codes (domestic output) and Schedule B export codes:

Domestic output	Exports
28135 00	415.2600

DESCRIPTION OF SURVEY

Scope of Survey—This survey covers firms engaged in the manufacture of industrial gases. Excluded from this survey are industrial gases vented or used for fuel by the producer.

Survey Description—The statistics in this publication were collected on Bureau of the Census monthly reporting Form M28C, Production of Industrial Gases. The mailing panel for this survey consisted of all known producers of industrial gases, approximately 670 producers of elemental gases, carbon dioxide, and acetylene.

Survey Error—Figures for the current month include estimates for respondents whose reports were not received in time for tabulation. Such missing figures are "imputed" from month-to-month movements shown by reporting firms and are generally limited to a maximum of 25 percent for any one item. Individual items with imputation greater than 25 percent are footnoted.

The imputation rate is not an explicit indicator of the potential error in published figures due to nonresponse because the actual monthly movements for nonrespondents may or may not closely agree with the imputed movements. The probable range of difference between the actual and imputed figures is unknown. The degree of uncertainty regarding the accuracy of the data, however, increases as the percentage of imputation increases. Figures with imputation rates above 25 percent should be used with caution.

Revision to Previous Period Data—Statistics for previous months may be revised due to receipt of corrected data from respondents, including late reports for which imputations were previously made as described above, and other corrections. Figures which have been revised by more than 5 percent from previously published figures are indicated by footnotes.

Reporting Period Adjustment—Since January 1975, the data have been adjusted for number of working days in the reporting period in order to compensate for differences in individual company reporting patterns, i.e., calendar month, 4-week, 5-week periods. Since the calendar month accounting system prevails in this industry, adjustments have been made to those reporting on other than a calendar month basis.

Seasonal Adjustment—This report presents seasonally adjusted data in table 1A for selected series shown in table 1B. The data were seasonally adjusted using the X-11 variant of the Bureau of the Census Method II seasonal adjustment program. This program is a ratio-to-moving average method. It largely eliminates the effect of seasonal variations (intra-year variations repeated constantly from year to year) within the series. The seasonally adjusted data provide a better measure of the month-to-month variations which are due to factors other than seasonal pattern. Additional information concerning seasonal adjustment is available in the seasonal adjustment supplement issued in this series.

EXPLANATION OF TERMS

Production—Data shown for production represent total quantity of each chemical produced, including quantity consumed in plants, and for sale or transfer to other plants or warehouses of the same company. The statistics presented in the tables provide an up-to-date measure of activity in the inorganic field, but do not necessarily indicate amounts entering the market. In some cases, figures are included for material produced "in process" as an intermediate to the end products.

COMPARISON OF EXPORT, IMPORT, AND DOMESTIC OUTPUT DATA

The Standard Industrial Classification (SIC) system used for domestic output and the statistical export and import commodity classifications were developed independently and are based on somewhat differing systems of classification. This results in considerable difficulty in comparing the three types of data for many commodity areas. The domestic output classification is based on type of industry; whereas, the export and import classification system is more materials oriented. Aside from the differences in the basic commodity classifications, there are additional problems involving import data, since there are a substantial number of imported commodities which are not produced in the United States or which are produced only in very small quantities and which, therefore, have no comparable domestic output classification. The relationships shown in this report should be considered only as approximations, since, in addition to those mentioned above, there are also the following problems affecting the comparability of the three sets of data.

Valuation—There are different methods of valuation for the three types of data:

Domestic Output—Valued at the point of production. It includes the net sales price, f.o.b. plant, after discounts and allowances, exclusive of freight charges and excise taxes.

Exports—Valued at the point of exportation. It includes the selling price, or cost if not sold, and inland freight, insurance, and other charges to the export point.

Imports—Valued at the first port of entry in the United States. It includes c.i.f. (cost, insurance, and freight), duty, and other charges to the import point.

Duplication in Quantity and Value of Output—Because producers' shipments of some commodities may be used as materials for incorporation into other commodities, combinations of data for such commodities may contain a certain amount of duplication. Thus, percentages of exports to output or imports to apparent consumption (output plus imports minus exports) at four-digit or broader levels may be understated. Where duplication is known to be substantial, the output data are appropriately noted in the table.

Low-Valued Export and Import Transactions—Commodity information is not shown for individual imports valued under \$251. For exports, commodity information is not reported for shipments individually valued under \$501 effective March 1979 and for shipments valued under \$251 prior to March 1979. This is believed to have only negligible effect on the statistics for most commodities.

Manufacturers' Shipments, Not Specified by Kind—The value of manufacturers' shipments at the four-digit industry level often includes a small amount which is not distributed among the individual five-digit product classes. Export and import percentages at the more detailed levels might, therefore, be slightly overstated.

Time Lag Between Output and Exports—There will be a lag between the time a commodity is produced or shipped by the producer and the time it is actually exported, especially when intermediaries (wholesalers, exporters, etc.) are involved. Ordinarily, this type of discrepancy is insignificant in annual figures.

"Direct" vs "Total" Commodity Exports and Imports—Export and import data do not include materials which are incorporated into other more finished products and exported or imported in finished form. Thus, by showing only direct exports and imports, the relation of exports to output and imports to apparent consumption for intermediate products is considerably understated.

Used Commodities—With a few exceptions, used or rebuilt commodities are classified in the same import or export codes as is new merchandise. Percentages are thus overstated to the extent that used or rebuilt products are significant in trade.

Geographic Area of Coverage—Import and export data reflect the movement of merchandise into and out of the U.S. customs territory (the 50 States, the District of Columbia, and Puerto Rico). They do not include movements between the United States and its possessions. Domestic output (shipments) data exclude Puerto Rico and other outlying areas.

RELATIONSHIP BETWEEN M28C AND MA-28C SERIES FOR INDUSTRIAL GASES

The data as shown in tables 1A and 1B reflect levels of production as reported by establishments on monthly Form M28C. These data are revised in the annual publication collected on Form MA-28C and are shown in table 9 of the annual report MA-28C. The actual data reported by establishments canvassed on the annual form differ by varying amounts from data collected monthly due to receipt of revised data from the respondent and establishments reporting on the annual and not on the monthly form. For these reasons, the monthly and annual data comprise two separate series and should be used as

such for analytical purposes. Specifically, the monthly data should be useful in describing month-to-month changes while the annual data provide a better indication of the level of production.

RELATED REPORTS

An annual Current Industrial Report is published in this series. The annual report summarizes monthly figures and incorporates all known revisions in the series for both current and previous year, thus providing a single reference copy to replace the monthly publications. The annual summary provides additional information on the history of this survey.

The Bureau of the Census publishes reports on other related products as follows:

Series	Frequency	Title
<i>Current Industrial Reports</i>		
M3-1	Monthly	<i>Manufacturers' Shipments, Inventories, and Orders</i>
M28A	Monthly	<i>Inorganic Chemicals</i>
M28B	Monthly	<i>Inorganic Fertilizer Materials and Related Products</i>
<i>Foreign Trade Reports</i>		
FT-410	Monthly	<i>U.S. Exports—Schedule E—Commodity by Country</i>
FT-135	Monthly	<i>U.S. General Imports—Schedule A—Commodity by Country</i>

CONTACTS FOR DATA USERS

Subject Area	Contact	Phone Number
Current Industrial Report M28C	Michael Kavros	(301) 763-7838
Foreign Trade publications	Juanita Noone	(301) 763-5140
Bureau of Industrial Economics	David H. Blank	(202) 377-5496
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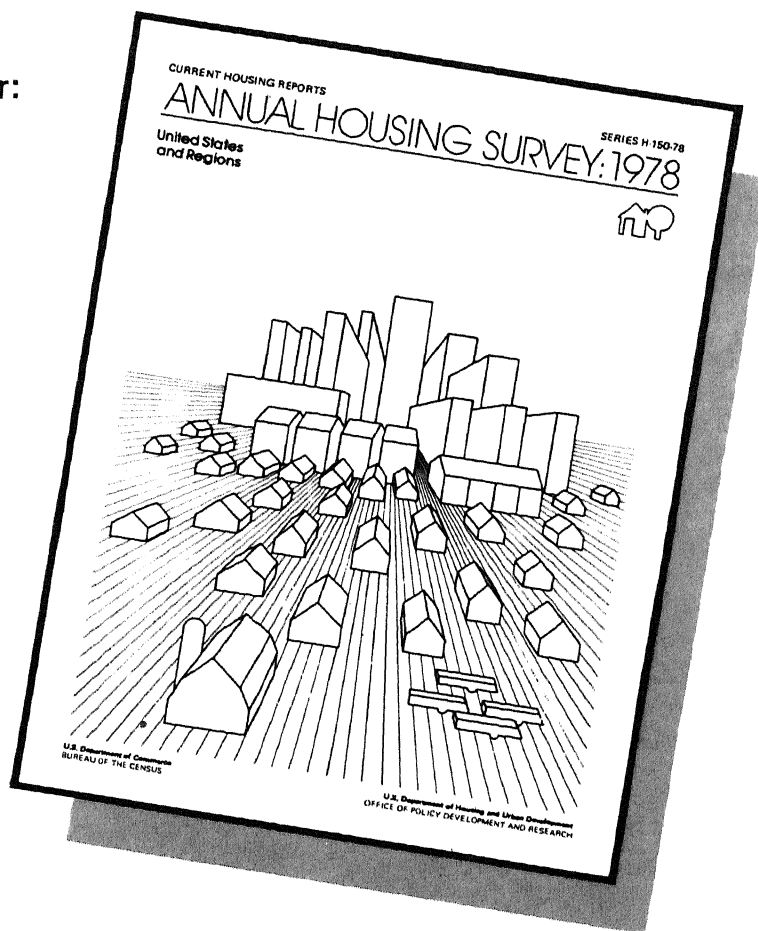
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CURRENT INDUSTRIAL REPORTS

Industrial Gases



U.S. Department of Commerce
BUREAU OF THE CENSUS

AUGUST 1981

M28C(81)-8
Issued October 1981

The statistics in this publication are based on a survey of firms engaged in the manufacture of industrial gases. The statistics represent total U.S. production of industrial gases. Excluded from this survey are industrial gases vented or used for fuel by the producer. Estimates are included for companies

whose reports were not received in time for tabulation. A description of the survey methodology and related information appears in the January 1981 report in this series, M28C(81)-1, issued March 1981.

Table 1. SUMMARY OF PRODUCTION OF PRINCIPAL GASES, NOT SEASONALLY ADJUSTED: 1979 TO 1981

Month and year	Acetylene (28132 00) (mil. cu. ft.)	Carbon dioxide, liquid and gas (28133 01 and 28133 02) (short tons)	Carbon dioxide, solid (28133 31) (short tons)	Hydrogen, high and low purity (100%) (28137 20) (mil. cu. ft.)	Nitrogen, high and low purity (100%) (28135 00) (mil. cu. ft.)	Oxygen, high and low purity (100%) (28136 00) (mil. cu. ft.)
1981						
August.....	355	319,409	33,973	6,769	41,272	34,653
July.....	384	347,202	36,698	7,815	40,921	36,147
June.....	394	309,322	33,303	7,748	40,396	35,726
May.....	404	290,467	30,437	7,994	41,797	37,964
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February.....	524	233,182	25,267	8,474	38,895	37,582
January.....	526	236,413	28,310	8,136	38,266	37,835
1979						
December.....	454	253,772	30,028	8,946	46,923	44,235
November.....	521	227,365	31,123	8,445	38,929	37,739
October.....	506	233,570	34,190	7,586	35,179	35,328
September.....	482	238,995	39,566	7,963	33,151	34,827
August.....	485	248,614	38,140	8,360	35,761	36,747
July.....	471	239,054	38,538	8,454	33,673	37,678

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Bureau of the Census

Table 2. PRIMARY PRODUCTION (QUANTITY) OF SPECIFIED INDUSTRIAL GASES

Product code	Chemical and basis	Unit of measure	August 1981	July 1981	August 1980
28132 00	Acetylene ¹	Mil. cu. ft.....	355	384	429
	Produced for compression, including cylinder and pipeline.....	..do.....	^a 113	^a 104	115
	Produced for pipeline shipment (excluding that shipped to be compressed) and for consumption in this plant.....	..do.....	242	280	314
28133 01	Carbon dioxide:				
	Gas ²	S. tons.....	^a 43,776	^a 44,516	42,371
28133 02	Liquid ².....	..do.....	275,633	302,686	253,102
28133 31	Solid (dry ice).....	..do.....	33,973	36,698	38,116
28137 15	Argon, high purity:				
	Produced for cylinder and bulk delivery and pipeline shipments, and for consumption.....	Mil. cu. ft.....	652	665	590
28137 20	Hydrogen ³.....	..do.....	6,769	7,815	6,678
	Liquid and gas:				
	Produced for cylinder and bulk delivery shipment.....	..do.....	887	1,036	848
	Produced for pipeline shipment and government use.....	..do.....	2,638	2,637	2,237
	Produced for consumption in this plant.....	..do.....	3,244	4,142	3,593
28135 00	Nitrogen ⁴.....	..do.....	41,272	40,921	35,649
	Gas:				
	Produced for pipeline shipment.....	..do.....	25,601	25,485	20,697
	Produced for consumption in this plant.....	..do.....	2,753	^r 3,072	3,360
	Liquid:				
	Produced for bulk delivery shipment to pipeline or to air separation plants.....	..do.....	1,282	1,057	983
	Produced for consumption in this plant.....	..do.....			314
	Liquid and gas:				
	Produced for cylinder and bulk delivery shipment.....	..do.....	11,636	11,307	10,295
28136 00	Oxygen.....	..do.....	34,653	36,147	31,637
	Gas:				
	Produced for pipeline shipment.....	..do.....	24,797	26,166	22,532
	Liquid:				
	Produced for bulk shipment to pipelines or to other air separation plants.....	..do.....	830	657	843
	Liquid and gas:				
	Produced for cylinder and bulk delivery shipment.....	..do.....	5,944	^r 6,021	4,783
	Produced for consumption in this plant.....	..do.....	3,082	^r 3,303	3,479

^aOver 25 percent of this item has been estimated.^rRevised by over 5 percent from previously published figures.¹Excludes quantities of acetylene produced and consumed by railroad shops, shipyards, and small establishments using portable generators.²Excludes quantities produced and consumed in plants manufacturing soda ash or urea.³Excludes quantities produced and consumed in the manufacture of methanol and ammonia but includes an unspecified amount of hydrogen produced for sale or interplant transfer to plants consuming this gas in the production of ammonia. Also excludes amounts of hydrogen produced in petroleum refineries for captive use.⁴Excludes amounts produced and used in the manufacture of ammonia and ammonia derivatives.

Table 3. PRODUCTION AND EXPORTS OF NITROGEN: JULY 1981

Product code	Product	Quantity produced (m.c.f.)	Exports of domestic merchandise (m.c.f.)	Percent of exports to production
28135 00	Nitrogen.....	40,921	1,698	4.1

Note: Detailed export data for industrial gases other than nitrogen are not available separately. Import data for industrial gases are included in "chemical elements, not specially provided for," and are not separately identified. Comparison of SIC codes (domestic output) and Schedule B export codes is shown in the January 1981 report in this series, M28C(81)-1, issued March 1981.

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The annual report provides similar data for the geographic areas of regions of the U.S. and for inside and outside SMSA's of the U.S. In addition, data are presented on facilities and services offered in new rental units, such as air conditioning and swimming pools.

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For furnished units, data are presented for the U.S. by asking rent classes and number of bedrooms. For cooperative and condominium units, data are given for the U.S. by number of bedrooms, regions, and percent absorbed after 3 months.

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CURRENT INDUSTRIAL REPORTS

Industrial Gases



U.S. Department of Commerce
BUREAU OF THE CENSUS

SEPTEMBER 1981

M28C(81)-9
Issued November 1981

The statistics in this publication are based on a survey of firms engaged in the manufacture of industrial gases. The statistics represent total U.S. production of industrial gases. Excluded from this survey are industrial gases vented or used for fuel by the producer. Estimates are included for companies

whose reports were not received in time for tabulation. A description of the survey methodology and related information appears in the January 1981 report in this series, M28C(81)-1, issued March 1981.

Table 1. SUMMARY OF PRODUCTION OF PRINCIPAL GASES, NOT SEASONALLY ADJUSTED: 1979 TO 1981

Month and year	Acetylene (28132 00) (mil. cu. ft.)	Carbon dioxide, liquid and gas (28133 01 and 28133 02) (short tons)	Carbon dioxide, solid (28133 31) (short tons)	Hydrogen, high and low purity (100%) (28137 20) (mil. cu. ft.)	Nitrogen, high and low purity (100%) (28135 00) (mil. cu. ft.)	Oxygen, high and low purity (100%) (28136 00) (mil. cu. ft.)
1981						
September.....	411	290,795	28,798	7,920	40,986	33,188
August.....	346	319,409	33,973	6,910	40,939	34,158
July.....	384	347,202	36,698	7,815	40,921	36,147
June.....	394	309,322	33,303	7,748	40,396	35,726
May.....	404	290,467	30,437	7,994	41,797	37,964
April.....	419	304,217	29,344	7,824	40,052	36,281
March.....	451	291,583	24,618	7,805	41,248	37,153
February.....	438	255,415	22,534	8,623	38,322	32,983
January.....	509	277,293	26,375	7,879	40,146	35,675
1980						
December.....	504	264,418	27,581	9,119	41,900	37,095
November.....	405	267,937	30,031	8,632	43,483	35,966
October.....	506	261,855	36,610	7,740	43,459	35,529
September.....	483	286,465	39,386	7,857	40,552	32,186
August.....	429	295,473	38,116	6,678	35,649	31,637
July.....	382	286,188	39,246	6,845	37,418	28,163
June.....	439	286,192	38,287	7,524	35,665	29,298
May.....	443	258,653	30,151	8,080	40,088	34,916
April.....	481	240,017	27,678	8,365	38,348	36,456
March.....	511	238,304	28,766	8,433	39,599	37,952
February.....	524	233,182	25,267	8,474	38,895	37,582
January.....	526	236,413	28,310	8,136	38,266	37,835
1979						
December.....	454	253,772	30,028	8,946	46,923	44,235
November.....	521	227,365	31,123	8,445	38,929	37,739
October.....	506	233,570	34,190	7,586	35,179	35,328
September.....	482	238,995	39,566	7,963	33,151	34,827
August.....	485	248,614	38,140	8,360	35,761	36,747

Address inquiries concerning these figures to U.S. Department of Commerce, Bureau of the Census, Industry Division, Washington, D.C. 20233, or call Michael Kavros, (301) 763-7838.

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Table 2. PRIMARY PRODUCTION (QUANTITY) OF SPECIFIED INDUSTRIAL GASES

Product code	Chemical and basis	Unit of measure	September 1981	August 1981	September 1980
28132 00	Acetylene ¹	Mil. cu. ft.....	411	346	483
	Produced for compression, including cylinder and pipeline.....	..do.....	^a 108	^r 103	132
	Produced for pipeline shipment (excluding that shipped to be compressed) and for consumption in this plant.....	..do.....	303	243	351
28133 01	Carbon dioxide:				
	Gas ²	S. tons.....	^a 29,998	^a 43,776	42,458
28133 02	Liquid ².....	..do.....	260,797	275,633	244,007
28133 31	Solid (dry ice).....	..do.....	28,798	33,973	39,386
28137 15	Argon, high purity:				
	Produced for cylinder and bulk delivery and pipeline shipments, and for consumption.....	Mil. cu. ft.....	650	668	629
28137 20	Hydrogen ³.....	..do.....	7,920	6,910	7,857
	Liquid and gas:				
	Produced for cylinder and bulk delivery shipment.....	..do.....	848	878	917
	Produced for pipeline shipment and government use.....	..do.....	2,725	2,643	2,743
	Produced for consumption in this plant.....	..do.....	4,347	3,389	4,197
28135 00	Nitrogen ⁴.....	..do.....	40,986	40,939	40,552
	Gas:				
	Produced for pipeline shipment.....	..do.....	25,494	25,363	26,543
	Produced for consumption in this plant.....	..do.....	3,637	2,797	3,406
	Liquid:				
	Produced for bulk delivery shipment to pipeline or to air separation plants.....	..do.....	657	1,279	752
	Produced for consumption in this plant.....	..do.....	379		307
	Liquid and gas:				
	Produced for cylinder and bulk delivery shipment.....	..do.....	10,819	11,500	9,544
28136 00	Oxygen.....	..do.....	33,188	34,158	32,186
	Gas:				
	Produced for pipeline shipment.....	..do.....	23,612	24,738	22,726
	Liquid:				
	Produced for bulk shipment to pipelines or to other air separation plants.....	..do.....	722	830	659
	Liquid and gas:				
	Produced for cylinder and bulk delivery shipment.....	..do.....	5,743	^r 5,943	5,050
	Produced for consumption in this plant.....	..do.....	3,111	^r 2,647	3,751

^aOver 25 percent of this item has been estimated.^rRevised by over 5 percent from previously published figures.¹Excludes quantities of acetylene produced and consumed by railroad shops, shipyards, and small establishments using portable generators.²Excludes quantities produced and consumed in plants manufacturing soda ash or urea.³Excludes quantities produced and consumed in the manufacture of methanol and ammonia but includes an unspecified amount of hydrogen produced for sale or interplant transfer to plants consuming this gas in the production of ammonia. Also excludes amounts of hydrogen produced in petroleum refineries for captive use.⁴Excludes amounts produced and used in the manufacture of ammonia and ammonia derivatives.

Table 3. PRODUCTION AND EXPORTS OF NITROGEN: AUGUST 1981

Product code	Product	Quantity produced (m.c.f.)	Exports of domestic merchandise (m.c.f.)	Percent of exports to production
28135 00	Nitrogen.....	40,939	1,497	3.7

Note: Detailed export data for industrial gases other than nitrogen are not available separately. Import data for industrial gases are included in "chemical elements, not specially provided for," and are not separately identified. Comparison of SIC codes (domestic output) and Schedule B export codes is shown in the January 1981 report in this series, M28C(81)-1, issued March 1981.

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CURRENT INDUSTRIAL REPORTS

Industrial Gases



U.S. Department of Commerce
BUREAU OF THE CENSUS

OCTOBER 1981

M28C(81)-10

Issued January 1982

The statistics in this publication are based on a survey of firms engaged in the manufacture of industrial gases. The statistics represent total U.S. production of industrial gases. Excluded from this survey are industrial gases vented or used for fuel by the producer. Estimates are included for companies

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Table 1. SUMMARY OF PRODUCTION OF PRINCIPAL GASES, NOT SEASONALLY ADJUSTED: 1979 TO 1981

Month and year	Acetylene (28132 00) (mil. cu. ft.)	Carbon dioxide, liquid and gas (28133 01 and 28133 02) (short tons)	Carbon dioxide, solid (28133 31) (short tons)	Hydrogen, high and low purity (100%) (28137 20) (mil. cu. ft.)	Nitrogen, high and low purity (100%) (28135 00) (mil. cu. ft.)	Oxygen, high and low purity (100%) (28136 00) (mil. cu. ft.)
1981						
October.....	397	305,327	29,278	8,322	41,382	36,303
September.....	425	295,928	28,450	8,785	41,225	34,930
August.....	353	319,540	32,996	7,630	40,939	34,158
July.....	389	349,640	35,645	8,544	40,921	36,147
June.....	388	312,919	32,361	8,490	40,396	35,726
May.....	397	294,051	29,647	8,746	41,797	37,964
April.....	409	325,968	28,555	8,625	40,052	36,281
March.....	440	300,156	23,955	8,582	41,248	37,153
February.....	404	266,474	21,929	9,490	38,322	32,983
January.....	480	285,236	25,687	8,660	40,146	35,675
1980						
December.....	491	285,156	24,675	10,072	42,461	38,591
November.....	394	286,621	26,864	9,551	43,997	37,349
October.....	492	279,568	32,749	8,550	43,962	36,903
September.....	475	303,382	35,232	8,703	41,085	33,508
August.....	422	312,301	34,096	7,380	36,007	32,870
July.....	373	303,152	35,107	7,592	37,859	29,243
June.....	432	304,491	34,249	8,340	36,082	30,416
May.....	433	278,043	26,971	8,957	40,523	36,222
April.....	471	256,948	24,759	9,235	38,791	37,832
March.....	494	256,682	25,732	9,322	40,094	39,419
February.....	507	251,947	22,602	9,381	39,359	39,021
January.....	509	253,521	25,324	8,981	38,744	39,355
1979						
December.....	441	314,851	29,324	9,628	46,982	44,210
November.....	508	282,088	30,391	9,069	38,927	37,708
October.....	493	289,786	33,386	8,168	35,131	35,321
September.....	472	296,517	38,635	8,595	33,038	34,803

Note: Data in table 1 have been revised as the result of the reconciliation between this report and the 1980 annual Current Industrial Report, MA-28C, Industrial Gases. For product detail, see table 9 in the annual Current Industrial Report, MA-28C, Industrial Gases, issued December 1981.

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Table 2. PRIMARY PRODUCTION (QUANTITY) OF SPECIFIED INDUSTRIAL GASES

Product code	Chemical and basis	Unit of measure	October 1981	September 1981	October 1980
28132 00	Acetylene ¹	Mil. cu. ft.....	397	425	492
	Produced for compression, including cylinder and pipeline.....	..do.....	124	112	133
	Produced for pipeline shipment (excluding that shipped to be compressed) and for consumption in this plant.....	..do.....	273	313	359
	Carbon dioxide:				
28133 01	Gas ²	S. tons.....	^a 43,534	^r 41,210	62,883
28133 02	Liquid ².....	..do.....	261,793	254,718	216,685
28133 31	Solid (dry ice).....	..do.....	29,278	28,450	32,749
28137 15	Argon, high purity:				
	Produced for cylinder and bulk delivery and pipeline shipments and for consumption.....	Mil. cu. ft.....	717	649	745
28137 20	Hydrogen ³.....	..do.....	8,322	^r 8,785	8,550
	Liquid and gas:				
	Produced for cylinder and bulk delivery shipment.....	..do.....	880	858	996
	Produced for pipeline shipment and Government use.....	..do.....	2,829	^r 3,174	3,118
	Produced for consumption in this plant.....	..do.....	4,613	^r 4,753	4,436
28135 00	Nitrogen ⁴.....	..do.....	41,382	41,225	43,962
	Gas:				
	Produced for pipeline shipment.....	..do.....	25,572	25,575	29,033
	Produced for consumption in this plant.....	..do.....	3,189	3,637	3,527
	Liquid:				
	Produced for bulk delivery shipment to pipeline or to air separation plants.....	..do.....	739	^r 620	709
	Produced for consumption in this plant.....	..do.....	344	383	240
	Liquid and gas:				
	Produced for cylinder and bulk delivery shipment.....	..do.....	11,538	11,010	10,453
28136 00	Oxygen.....	..do.....	36,303	34,930	36,903
	Gas:				
	Produced for pipeline shipment.....	..do.....	26,446	^r 25,311	25,850
	Liquid:				
	Produced for bulk shipment to pipelines or to other air separation plants.....	..do.....	732	718	6,577
	Liquid and gas:				
	Production for cylinder and bulk delivery shipment.....	..do.....	6,470	5,795	
	Produced for consumption in this plant.....	..do.....	2,655	3,106	4,476

^aOver 25 percent of this item has been estimated. ^rRevised by over 5 percent from previously published figures.

¹Excludes quantities of acetylene produced and consumed by railroad shops, shipyards, and small establishments using portable generators.

²Excludes quantities produced and consumed in plants manufacturing soda ash or urea.

³Excludes quantities produced and consumed in the manufacture of methanol and ammonia but includes an unspecified amount of hydrogen produced for sale or interplant transfer to plants consuming this gas in the production of ammonia. Also excludes amounts of hydrogen produced in petroleum refineries for captive use.

⁴Excludes amounts produced and used in the manufacture of ammonia and ammonia derivatives.

Table 3. PRODUCTION AND EXPORTS OF NITROGEN: SEPTEMBER 1981

Product code	Product	Quantity produced (m.c.f.)	Exports of domestic merchandise (m.c.f.)	Percent of exports to production
28135 00	Nitrogen.....	44,672	2,787	6.2

Note: Detailed export data for industrial gases other than nitrogen are not available separately. Import data for industrial gases are included in "chemical elements not specially provided for," and are not separately identified. Comparison of SIC codes (domestic output) and Schedule B export codes is shown in the January 1981 report in this series, M28C(81)-1, issued March 1981.

Table 4. PRIMARY PRODUCTION (QUANTITY) OF SPECIFIED INDUSTRIAL GASES, BY MONTHS: JANUARY TO AUGUST 1981 REVISED

Code	Product	Unit of measure	January	February	March	April	May	June	July	August
28132 00	Acetylene ¹	Mil. cu. ft..	480	404	440	409	397	388	389	353
	Produced for compression, including cylinder and pipeline.....	..do.....	135	114	129	113	108	105	107	108
	Produced for pipeline shipment (excluding that produced to be compressed) and for consumption in this plant.....	..do.....	345	290	311	296	289	283	282	245
28133 01	Carbon dioxide:									
	Gas ²	Short tons...	57,092	63,097	68,621	62,947	51,225	54,667	55,715	52,474
28133 02	Liquid ².....	..do.....	228,144	203,377	231,535	263,021	242,826	258,252	293,925	267,066
28133 31	Solid.....	..do.....	25,687	21,929	23,955	28,555	29,647	32,361	35,645	32,996
28135 00	Nitrogen ³	Mil. cu. ft..	40,146	38,322	41,248	40,052	41,797	40,396	40,921	40,939
	Gas:									
	Produced for pipeline shipment.....	..do.....	26,795	24,805	26,171	25,220	25,787	25,258	25,485	25,363
	Produced for consumption in this plant.....	..do.....	3,294	2,995	3,462	3,506	3,810	3,415	3,072	2,797
	Liquid:									
	Produced for bulk shipment to pipeline or to other air separation plants.....	..do.....	797	771	727	825	829	1,209	1,057	1,279
	Produced for consumption in this plant.....	..do.....	282	316	266	338	335			
	Liquid and gas produced for cylinder and bulk delivery.....	..do.....	8,978	9,435	10,622	10,163	11,036	10,514	11,307	11,500
28136 00	Oxygen.....	..do.....	35,675	32,983	37,153	36,281	37,964	35,726	36,147	34,158
	Gas produced for pipeline shipment.....	..do.....	24,623	22,131	25,554	24,735	26,262	25,502	26,166	24,738
	Liquid produced for bulk shipment to pipeline or to other air separation plants.....	..do.....	795	699	925	759	780	688	657	830
	Liquid and gas:									
	Produced for cylinder and bulk delivery shipment.....	..do.....	5,348	5,540	5,915	6,026	6,380	5,822	6,021	5,943
	Produced for consumption in this plant.....	..do.....	4,909	4,613	4,759	4,761	4,542	3,714	3,303	2,647
28137 15	Argon, high purity:									
	Produced for cylinder and bulk delivery and pipeline shipments and for consumption in this plant.....	..do.....	581	617	727	634	737	660	665	670
28137 20	Hydrogen ⁴.....	..do.....	8,660	9,490	8,582	8,625	8,746	8,490	8,544	7,630
	Produced for cylinder and bulk delivery shipment.....	..do.....	918	931	1,117	859	1,155	973	1,036	878
	Produced for pipeline shipment and Government use.....	..do.....	3,067	3,156	2,910	2,976	2,963	3,105	3,094	3,134
	Produced for consumption in this plant.....	..do.....	4,675	5,403	4,555	4,790	4,628	4,412	4,414	3,618

Note: Data in table 4 have been revised based on the result of the reconciliation between this report and the 1980 annual Current Industrial Report MA-28C, Industrial Gases, issued December 1981.

¹Excludes quantities of acetylene produced and consumed by railroad shops, shipyards, and small establishments using portable generators.

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CURRENT INDUSTRIAL REPORTS

Industrial Gases



U.S. Department of Commerce
BUREAU OF THE CENSUS

NOVEMBER 1981

M28C(81)-11
Issued February 1982

The statistics in this publication are based on a survey of firms engaged in the manufacture of industrial gases. The statistics represent total U.S. production of industrial gases. Excluded from this survey are industrial gases vented or used for fuel by the producer. Estimates are included for companies

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1981						
November.....	387	280,975	25,215	7,667	39,191	32,530
October.....	392	305,327	29,278	8,300	41,545	36,440
September.....	425	295,928	28,450	8,785	41,225	34,930
August.....	353	319,540	32,996	7,630	40,939	34,158
July.....	389	349,640	35,645	8,544	40,921	36,147
June.....	388	312,919	32,361	8,490	40,396	35,726
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July.....	373	303,152	35,107	7,592	37,859	29,243
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May.....	433	278,043	26,971	8,957	40,523	36,222
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January.....	509	253,521	25,324	8,981	38,744	39,355
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Table 2. PRIMARY PRODUCTION (QUANTITY) OF SPECIFIED INDUSTRIAL GASES

Product code	Chemical and basis	Unit of measure	November 1981	October 1981	November 1980
28132 00	Acetylene ¹	Mil. cu. ft.....	387	392	394
	Produced for compression, including cylinder and pipeline.....	..do.....	110	125	108
	Produced for pipeline shipment (excluding that shipped to be compressed) and for consumption in this plant.....	..do.....	277	267	286
	Carbon dioxide:				
28133 01	Gas ²	S. tons.....	^a 49,577	^a 43,534	66,176
28133 02	Liquid ².....	..do.....	231,398	261,793	220,445
28133 31	Solid (dry ice).....	..do.....	25,215	29,278	26,864
28137 15	Argon, high purity:				
	Produced for cylinder and bulk delivery and pipeline shipments, and for consumption.....	Mil. cu. ft.....	656	718	762
28137 20	Hydrogen ³.....	..do.....	7,667	8,300	9,551
	Liquid and gas:				
	Produced for cylinder and bulk delivery shipment.....	..do.....	899	880	1,046
	Produced for pipeline shipment and government use.....	..do.....	2,860	2,807	3,569
	Produced for consumption in this plant.....	..do.....	3,908	4,613	4,936
28135 00	Nitrogen ⁴.....	..do.....	39,191	41,545	43,997
	Gas:				
	Produced for pipeline shipment.....	..do.....	24,355	25,574	29,702
	Produced for consumption in this plant.....	..do.....	2,556	3,236	3,575
	Liquid:				
	Produced for bulk delivery shipment to pipeline or to air separation plants.....	..do.....	844	739	672
	Produced for consumption in this plant.....	..do.....	358	344	263
	Liquid and gas:				
	Produced for cylinder and bulk delivery shipment.....	..do.....	11,078	11,652	9,785
28136 00	Oxygen.....	..do.....	32,530	36,440	37,349
	Gas:				
	Produced for pipeline shipment.....	..do.....	23,915	26,537	26,195
	Liquid:				
	Produced for bulk shipment to pipelines or to other air separation plants.....	..do.....	719	708	6,805
	Liquid and gas:				
	Produced for cylinder and bulk delivery shipment.....	..do.....	5,600	6,485	
	Produced for consumption in this plant.....	..do.....	2,296	2,710	4,349

^a Over 25 percent of this item has been estimated.

¹Excludes quantities of acetylene produced and consumed by railroad shops, shipyards, and small establishments using portable generators.

²Excludes quantities produced and consumed in plants manufacturing soda ash or urea.

³Excludes quantities produced and consumed in the manufacture of methanol and ammonia, but includes an unspecified amount of hydrogen produced for sale or interplant transfer to plants consuming this gas in the production of ammonia. Also excludes amounts of hydrogen produced in petroleum refineries for captive use.

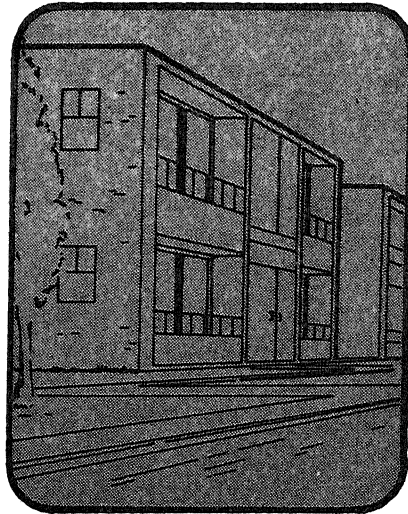
⁴Excludes amounts produced and used in the manufacture of ammonia and ammonia derivatives.

Table 3. PRODUCTION AND EXPORTS OF NITROGEN: OCTOBER 1981

Product code	Product	Quantity produced (m.c.f.)	Exports of domestic merchandise (m.c.f.)	Percent of exports to production
28135 00	Nitrogen.....	41,545	2,538	6.1

Note: Detailed export data for industrial gases other than nitrogen are not available separately. Import data for industrial gases are included in "chemical elements, not specially provided for," and are not separately identified. Comparison of SIC codes (domestic output) and Schedule B export codes is shown in the January 1981 report in this series, M28C(81)-1, issued March 1981.

quarterly housing report



market absorption of apartments

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This report provides data on the characteristics of non-subsidized and privately financed apartment units in buildings with 5 or more units completed during a calendar year. For unfurnished units, the characteristics include number of bedrooms, asking rent classes, and the three-month absorption rate. Geographically, the data are presented by regions of the U.S. and by inside and outside SMSA's for the U.S.

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CURRENT INDUSTRIAL REPORTS

Industrial Gases



J.S. Department of Commerce
BUREAU OF THE CENSUS

DECEMBER 1981

M28C(81)-12
Issued February 1982

The statistics in this publication are based on a survey of firms engaged in the manufacture of industrial gases. The statistics represent total U.S. production of industrial gases. Excluded from this survey are industrial gases vented or used for fuel by the producer. Estimates are included for companies

whose reports were not received in time for tabulation. A description of the survey methodology and related information appears in the January 1981 report in this series, M28C(81)-1, issued March 1981.

Table 1. SUMMARY OF PRODUCTION OF PRINCIPAL GASES, NOT SEASONALLY ADJUSTED: 1979 TO 1981

Month and year	Acetylene (28132 00) (mil. cu. ft.)	Carbon dioxide, liquid and gas (28133 01 and 28133 02) (short tons)	Carbon dioxide, solid (28133 31) (short tons)	Hydrogen, high and low purity (100%) (28137 20) (mil. cu. ft.)	Nitrogen, high and low purity (100%) (28135 00) (mil. cu. ft.)	Oxygen, high and low purity (100%) (28136 00) (mil. cu. ft.)
1981						
December.....	443	289,483	24,688	8,042	39,209	31,688
November.....	384	298,569	25,215	7,669	39,246	32,603
October.....	392	305,327	29,278	8,300	41,545	36,440
September.....	425	295,928	28,450	8,785	41,225	34,930
August.....	353	319,540	32,996	7,630	40,939	34,158
July.....	389	349,640	35,645	8,544	40,921	36,147
June.....	388	312,919	32,361	8,490	40,396	35,726
May.....	397	294,051	29,647	8,746	41,797	37,964
April.....	409	325,968	28,555	8,625	40,052	36,281
March.....	440	300,156	23,955	8,582	41,248	37,153
February.....	404	266,474	21,929	9,490	38,322	32,983
January.....	480	285,236	25,687	8,660	40,146	35,675
1980						
December.....	491	285,156	24,675	10,072	42,461	38,591
November.....	394	286,621	26,864	9,551	43,997	37,349
October.....	492	279,568	32,749	8,550	43,962	36,903
September.....	475	303,382	35,232	8,703	41,085	33,508
August.....	422	312,301	34,096	7,380	36,007	32,870
July.....	373	303,152	35,107	7,592	37,859	29,243
June.....	432	304,491	34,249	8,340	36,082	30,416
May.....	433	278,043	26,971	8,957	40,523	36,222
April.....	471	256,948	24,759	9,235	38,791	37,832
March.....	494	256,682	25,732	9,322	40,094	39,419
February.....	507	251,947	22,602	9,381	39,359	39,021
January.....	509	253,521	25,324	8,981	38,744	39,355
1979						
December.....	441	314,851	29,324	9,628	46,982	44,210
November.....	508	282,088	30,391	9,069	38,927	37,708

Address inquiries concerning these figures to U.S. Department of Commerce, Bureau of the Census, Industry Division, Washington, D.C. 20233, or call Michael Kavros, (301) 763-7838.

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Table 2. PRIMARY PRODUCTION (QUANTITY) OF SPECIFIED INDUSTRIAL GASES

Product code	Chemical and basis	Unit of measure	December 1981	November 1981	December 1980
28132 00	Acetylene ¹	Mil. cu. ft....	443	384	491
	Produced for compression, including cylinder and pipeline.....	..do.....	123	111	121
	Produced for pipeline shipment (excluding that shipped to be compressed) and for consumption in this plant.....	..do.....	320	273	370
28133 01	Carbon dioxide:				
	Gas ²	S. tons.....	^a 62,746	^r 63,820	72,806
28133 02	Liquid ².....	..do.....	226,737	234,749	212,350
28133 31	Solid (dry ice).....	..do.....	24,688	25,215	24,675
28137 15	Argon, high purity:				
	Produced for cylinder and bulk delivery and pipeline shipments, and for consumption.....	Mil. cu. ft....	608	659	692
28137 20	Hydrogen ³.....	..do.....	8,042	7,669	10,072
	Liquid and gas:				
	Produced for cylinder and bulk delivery shipment.....	..do.....	1,008	897	1,017
	Produced for pipeline shipment and government use.....	..do.....	2,704	2,854	3,587
	Produced for consumption in this plant.....	..do.....	4,330	3,918	5,468
28135 00	Nitrogen ⁴.....	..do.....	39,209	39,246	42,461
	Gas:				
	Produced for pipeline shipment.....	..do.....	25,078	24,410	28,130
	Produced for consumption in this plant.....	..do.....	3,068	2,570	3,697
	Liquid:				
	Produced for bulk delivery shipment to pipeline or to air separation plants.....	..do.....	505	843	515
	Produced for consumption in this plant.....	..do.....	354	361	240
	Liquid and gas:				
	Produced for cylinder and bulk delivery shipment.....	..do.....	10,204	11,062	9,879
28136 00	Oxygen.....	..do.....	31,688	32,603	38,591
	Gas:				
	Produced for pipeline shipment.....	..do.....	22,821	23,953	27,955
	Liquid:				
	Produced for bulk shipment to pipelines or to other air separation plants.....	..do.....		719	
	Liquid and gas:				
	Produced for cylinder and bulk delivery shipment.....	..do.....	5,731	5,637	6,189
	Produced for consumption in this plant.....	..do.....	^a 3,136	2,294	4,447

^a Over 20 percent of this item has been estimated. ^r Revised by over 5 percent from previously published figures.

¹Excludes quantities of acetylene produced and consumed by railroad shops, shipyards, and small establishments using portable generators.

²Excludes quantities produced and consumed in plants manufacturing soda ash or urea.

³Excludes quantities produced and consumed in the manufacture of methanol and ammonia, but includes an unspecified amount of hydrogen produced for sale or interplant transfer to plants consuming this gas in the production of ammonia. Also excludes amounts of hydrogen produced in petroleum refineries for captive use.

⁴Excludes amounts produced and used in the manufacture of ammonia and ammonia derivatives.

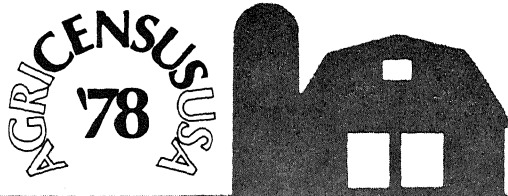
Table 3. PRODUCTION AND EXPORTS OF NITROGEN: NOVEMBER 1981

Product code	Product	Quantity produced (m.c.f.)	Exports of domestic merchandise (m.c.f.)	Percent of exports to production
28135 00	Nitrogen.....	39,246	3,112	7.9

Note: Detailed export data for industrial gases other than nitrogen are not available separately. Import data for industrial gases are included in "chemical elements, not specially provided for," and are not separately identified. Comparison of SIC codes (domestic output) and Schedule B export codes is shown in the January 1981 report in this series, M28C(81)-1, issued March 1981.

1978 CENSUS OF AGRICULTURE

U.S. Department of Commerce BUREAU OF THE CENSUS



Farms

Land in Farms

Foreign Ownership

Energy—Expenditures

Value of Land and Buildings

Land Use—Crops Harvested

Value of Sales by Commodity Group

Livestock and Poultry—Inventory and Sales

Farm Operators—Race, Age, Sex, Principal Occupation

Volume 1 State and County Data

Part No.	States	Stock Number	Price
1	ALABAMA	003-024-02323-7	\$12
2	ALASKA	003-024-02324-5	\$7
3	ARIZONA	003-024-02325-3	\$8
4	ARKANSAS	003-024-02326-1	\$12
5	CALIFORNIA	003-024-02327-0	\$12
6	COLORADO	003-024-02328-8	\$12
7	CONNECTICUT	003-024-02329-6	\$7.50
8	DELAWARE	003-024-02330-0	\$7.50
9	FLORIDA	003-024-02331-8	\$12
10	GEORGIA	003-024-02332-6	\$19
11	HAWAII	003-024-02333-4	\$7
12	IDAHO	003-024-02334-2	\$10
13	ILLINOIS	003-024-02335-1	\$12
14	INDIANA	003-024-02336-9	\$13
15	IOWA	003-024-02337-7	\$12
16	KANSAS	003-024-02338-5	\$14
17	KENTUCKY	003-024-02339-3	\$14
18	LOUISIANA	003-024-02340-7	\$12
19	MAINE	003-024-02341-5	\$8
20	MARYLAND	003-024-02342-3	\$10
21	MASSACHUSETTS	003-024-02343-9	\$7.50
22	MICHIGAN	003-024-02344-0	\$12
23	MINNESOTA	003-024-02345-8	\$13
24	MISSISSIPPI	003-024-02346-6	\$12
25	MISSOURI	003-024-02347-4	\$14
26	MONTANA	003-024-02348-2	\$11
27	NEBRASKA	003-024-02349-1	\$13
28	NEVADA	003-024-02350-4	\$8
29	NEW HAMPSHIRE	003-024-02351-2	\$7.50

Part No.	States	Stock Number	Price
30	NEW JERSEY	003-024-02352-1	\$9.50
31	NEW MEXICO	003-024-02353-9	\$9
32	NEW YORK	003-024-02354-7	\$11
33	NORTH CAROLINA	003-024-02355-5	\$13
34	NORTH DAKOTA	003-024-02356-3	\$10
35	OHIO	003-024-02357-7	\$13
36	OKLAHOMA	003-024-02358-6	\$12
37	OREGON	003-024-02359-8	\$9.50
38	PENNSYLVANIA	003-024-02360-1	\$11
39	RHODE ISLAND	003-024-02361-0	\$7.50
40	SOUTH CAROLINA	003-024-02362-8	\$10
41	SOUTH DAKOTA	003-024-02363-6	\$12
42	TENNESSEE	003-024-02364-4	\$13
43	TEXAS	003-024-02365-2	\$23
44	UTAH	003-024-02366-5	\$9
45	VERMONT	003-024-02367-9	\$8
46	VIRGINIA	003-024-02368-7	\$13
47	WASHINGTON	003-024-02369-5	\$9.50
48	WEST VIRGINIA	003-024-02370-9	\$11
49	WISCONSIN	003-024-02371-7	\$12
50	WYOMING	003-024-02372-5	\$9
51	UNITED STATES	003-024-02322-9	\$11
52	PUERTO RICO	003-024-02373-3	\$7.50
53	GUAM	003-024-02374-1	\$4
54	VIRGIN ISLANDS	003-024-02375-0	\$2.50
55	AMERICAN SAMOA	003-024-02376-8	\$3.25
56	NORTHERN MARIANA ISLANDS	003-024-02377-6	\$2.75

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Industrial Gases



U.S. Department of Commerce
BUREAU OF THE CENSUS

1981

MA-28C(81)-1
Issued October 1982

SUMMARY OF FINDINGS

Value of shipments of industrial gases in 1981 totaled \$2,001.2 million. Compared with 1980, the 1981 value of shipments decreased 4 percent for acetylene, while value of shipments for nitrogen and oxygen increased 21 percent and 23 percent, respectively.

Quantity of shipments increased for most gases, except acetylene which decreased 9 percent. Both oxygen and nitrogen shipments increased 2 percent.

Monthly statistics for specified gases for 1980 and 1981 are shown in table 9. These monthly statistics supersede those which were released earlier in the monthly Current Industrial Reports, Series M28C, *Industrial Gases*, United States Production.

A description of the survey methodology and other related information appears on page 8.

Table 1. PRODUCTION AND SHIPMENTS OF SELECTED INDUSTRIAL GASES: 1977 TO 1981
(Production and quantity of shipments in million cubic feet; value in million dollars)

Product class code	Product and year	Production	Shipments	
			Quantity	Value
28132	Acetylene:			
	1981.....	5,161	3,431	166.4
	1980.....	5,493	3,779	172.8
	1979.....	5,608	3,916	160.2
	1978.....	5,306	3,456	130.2
	1977.....	6,003	3,830	136.7
28133	Carbon dioxide:			
	Gas (short tons):			
	1981.....	3,725,331	2,889,530	24.7
	1980.....	(¹)	(¹)	(¹)
	1979.....	(¹)	(¹)	(¹)
	1978.....	(NA)	(NA)	(NA)
	1977.....	(NA)	(NA)	(NA)
	Liquid (short tons):			
	1981.....	3,471,686	3,249,039	141.0
	1980.....	² 2,656,305	² 2,557,954	² 106.0
	1979.....	² 2,629,902	² 2,417,344	² 96.1
	1978.....	(NA)	(NA)	(NA)
	1977.....	(NA)	(NA)	(NA)
	Solid (dry ice) (short tons):			
	1981.....	341,059	340,889	33.1
	1980.....	348,360	348,350	30.0
	1979.....	356,702	356,702	31.1
	1978.....	344,552	345,049	26.2
	1977.....	363,085	347,298	28.0
28135	Nitrogen:			
	1981.....	490,285	444,138	541.5
	1980.....	479,240	434,617	448.5
	1979.....	427,107	382,387	364.5
	1978.....	378,923	333,892	329.1
	1977.....	327,661	300,003	273.8
28136	Oxygen:			
	1981.....	430,610	388,252	608.1
	1980.....	430,977	381,256	496.3
	1979.....	456,244	402,603	466.1
	1978.....	430,041	379,030	432.4
	1977.....	392,427	340,471	354.1
28137 pt.	Hydrogen:			
	1981.....	103,278	49,756	166.6
	1980.....	106,562	50,667	139.4
	1979.....	106,456	51,266	123.7
	1978.....	90,470	38,718	96.1
	1977.....	84,759	35,165	94.7

(NA) Not available.

¹For 1981, approximately 30 establishments producing carbon dioxide gas as a byproduct were added to this survey. These plants were previously excluded in error. Data for 1980 and prior years are significantly understated and, therefore, not shown.

²For 1981, approximately 15 establishments producing carbon dioxide liquid in 1981, were added to this survey. These plants, which previously were excluded in error, amounted for approximately 15 percent of the total production for 1981. Production data for these plants are not included in the data shown for 1980 and prior years; therefore, these data are not directly comparable to the 1981 figures.

Address inquiries concerning these figures to U.S. Department of Commerce, Bureau of the Census, Industry Division, Washington, D.C. 20233, or call Carole Ambler, (301) 763-5911.

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Table 2. PRODUCTION AND SHIPMENTS OF INDUSTRIAL GASES: 1981 TO 1980

(Production and quantity of shipments in million cubic feet; value in thousands of dollars)

Code	Product	1981			1980		
		Production	Shipments		Production	Shipments	
			Quantity	Value		Quantity	Value
2813- --	Industrial gases.....	(X)	(X)	¹ 2,001,153	(X)	(X)	(²)
28132 --	Acetylene ³	5,161	3,431	166,421	5,493	3,779	172,150
28132 11	Produced for compression, including cylinder and pipeline.....	1,413	1,413	100,440	1,410	1,402	94,856
28132 21	Produced for pipeline shipment (excluding that shipped to be compressed) and for consumption in this plant.....	3,748	2,018	65,981	4,083	2,377	77,894
28133 --	Carbon dioxide: ⁴						
28133 01	Gas (short tons).....	3,725,331	2,889,530	24,745	(⁵)	(⁵)	(⁵)
28133 02	Liquid (short tons).....	3,471,686	3,249,039	141,013	⁶ 2,656,305	⁶ 2,557,954	⁶ 106,041
28133 31	Solid (dry ice) (short tons).....	341,059	340,889	33,095	348,360	348,350	30,049
28135 --	Nitrogen ⁷	490,285	444,138	541,504	479,240	434,617	448,549
	Gas:						
28135 11	Produced for pipeline shipment.....	309,027	306,822	208,133	316,228	314,595	167,762
28135 13	Produced for consumption in this plant.....	40,199	(X)	(X)	39,928	(X)	(X)
	Liquid:						
28135 21	Produced for bulk delivery shipment to pipeline or to other air separation plants.....	9,125	9,125	11,726	7,132	7,132	8,770
28135 23	Produced for consumption in this plant.....	3,665	(X)	(X)	3,134	(X)	(X)
28135 41	Liquid and gas, produced for cylinder and bulk delivery shipment	128,269	128,191	321,645	112,818	112,890	272,017
28136 --	Oxygen ⁷	430,610	388,252	608,071	430,977	381,256	496,312
28136 11	Gas, produced for pipeline shipment.....	308,094	308,094	376,737	307,181	307,164	305,916
28136 21	Liquid, produced for bulk shipment to pipeline or to other air separation plants.....	(⁸)	(⁸)	(⁸)	(⁸)	(⁸)	(⁸)
	Liquid and gas:						
28136 31	Produced for cylinder and bulk delivery shipment.....	80,671	80,158	231,334	74,092	74,092	190,396
28136 41	Produced for consumption in this plant.....	41,845	(X)	(X)	49,704	(X)	(X)
28137 --	Elemental gases and other industrial gases, n.e.c.....	(X)	(X)	418,542	(X)	(X)	355,871
28137 15	Argon, high purity produced for cylinder and bulk delivery, pipeline shipments, and for consumption in this plant.....	8,039	8,029	162,326	7,895	7,885	136,732
	Helium ⁹	1,065	1,255	(NA)	1,458	1,161	(NA)
28137 20	Hydrogen, liquid and gas.....	¹⁰ 103,278	49,756	166,601	¹⁰ 106,562	50,667	139,387
28137 21	Produced for cylinder and bulk delivery shipment.....	11,593	11,600	88,757	11,731	11,708	77,856
28137 31	Produced for pipeline shipment and Government use.....	38,235	38,156	77,844	39,522	38,959	61,531
28137 41	Produced for consumption in this plant.....	53,450	(X)	(X)	55,309	(X)	(X)
28137 98	Other industrial gases, n.e.c., including crude argon, nitrous oxide, carbon dioxide produced and transferred for further processing, and crude and high purity helium produced in privately owned plants ¹¹	(X)	(X)	89,615	(X)	(X)	79,752
28130 00	As estimated for Current Industrial Report Series MA-28C (n.s.k. - see note).....	(X)	(X)	66,985	(X)	(X)	56,923

Note: N.s.k. represents the value of shipments for establishments which did not provide detailed information by type of product. These establishments, typically with less than 5 employees, are not included on the MA-28C mailing panel. The n.s.k. value has been estimated for Series MA-28C based on the rate of change for the reporting establishments applied to the previous year's figure.

(NA) Not available. (X) Not applicable. N.e.c. Not elsewhere classified.

¹Excludes value for helium produced in Government-owned plants.

²Data not available for carbon dioxide gas; therefore, total value data for industrial gases not available. See footnotes 3 and 4.

³Excludes information from railroad ships, shipyards, welding shops, and small establishments using portable generators.

⁴Excludes quantities produced and consumed in plants manufacturing soda ash or urea.

⁵For 1981, approximately 30 establishments producing carbon dioxide gas as a byproduct were added to this survey. These plants were previously excluded in error. Data for 1980 and prior years are significantly understated and, therefore, not shown.

⁶For 1981, approximately 15 establishments producing carbon dioxide liquid were added to this survey. These plants, which previously were excluded in error, accounted for approximately 15 percent of the total production for 1981. Production data for these plants are not included in the data shown for 1980 and prior years; therefore, these data are not directly comparable to the 1981 figures.

⁷Excludes amounts produced and consumed in the manufacture of synthetic ammonia or ammonia derivatives.

⁸Data for liquid oxygen produced for bulk delivery shipment are combined with liquid and gas oxygen produced for cylinder and bulk delivery shipment to avoid disclosing figures for individual companies.

⁹Source: U.S. Department of Interior, Bureau of Mines.

¹⁰Excludes amounts vented, used as fuel, etc., and amounts produced and consumed in the manufacture of synthetic ammonia and methanol, but includes an unspecified amount produced for sale or interplant transfer to plants consuming this gas in the production of ammonia. Also excludes amounts produced by the ammonia dissociation process (cracking of ammonia). Also excludes amounts produced in petroleum refineries for captive use.

¹¹Excludes hydrocarbon gases such as propane, butane, and propylene, or halogenated hydrocarbons and cyclopropane, which are reported to the U.S. Tariff Commission. Also, excludes sulfur dioxide and chlorine data, which are shown in Current Industrial Reports Series M28A(80)-1, Inorganic Chemicals.

Table 3. PRODUCTION AND SHIPMENTS OF ACETYLENE, BY GEOGRAPHIC AREA: 1981 AND 1980

(Production and quantity in mil. cu. ft.; value in thousands of dollars)

Geographic Area	1981			1980		
	Production	Shipments		Production	Shipments	
		Quantity	Value		Quantity	Value
Total.....	5,161	3,431	166,421	5,493	3,779	172,750
Northeast Region and North Central Region...	640	626	45,977	650	630	43,364
South Region.....	4,289	2,579	104,470	4,598	2,910	114,231
West Region.....	232	226	15,974	245	239	15,155

Table 4. PRODUCTION AND SHIPMENTS OF CARBON DIOXIDE, BY GEOGRAPHIC AREA: 1981

(Production and quantity in short tons; value in thousands of dollars)

Geographic area	Gas			Liquid			Solid (dry ice)		
	Production	Shipments		Production	Shipments		Production	Shipments	
		Quantity	Value		Quantity	Value		Quantity	Value
Total.....	3,725,331	2,889,530	24,745	3,471,686	3,249,039	141,013	341,059	340,889	33,095
Northeast Region.....	-	-	-	165,260	164,865	7,846	(D)	(D)	(D)
North Central Region.....	(D)	(D)	(D)	1,237,495	1,122,370	47,279	(D)	(D)	(D)
East North Central.....				658,947	618,113	28,455	96,602	96,602	10,738
West North Central.....				578,548	504,257	18,824	(D)	(D)	(D)
South Region.....				1,555,872	1,508,607	67,567	81,018	81,018	7,754
South Atlantic and East South Central...	(D)	(D)	(D)	1,043,655	1,013,601	51,084	39,891	39,891	4,107
West South Central.....				512,217	495,006	16,483	41,127	41,127	3,647
West Region.....	(D)	(D)	(D)	513,059	453,197	18,321	84,937	84,937	6,945
Mountain.....				(D)	(D)	(D)	26,755	26,755	1,201
Pacific.....				(D)	(D)	(D)	58,182	58,182	5,744

- Represents zero. (D) Data withheld to avoid disclosing figures for individual companies.

Table 5. SHIPMENTS OF ARGON (HIGH PURITY), BY GEOGRAPHIC AREA: 1981 AND 1980

(Quantity in mil. cu. ft.; value in thousands of dollars)

Geographic area	1981		1980	
	Quantity	Value	Quantity	Value
Total.....	8,029	162,326	7,885	136,732
Northeast Region.....	1,302	33,383	1,278	27,404
North Central Region.....	2,711	52,247	2,740	45,800
Ohio.....	894	15,574	931	13,961
South Region.....	3,061	58,915	2,909	47,654
South Atlantic Division.....	946	22,496	916	17,969
East South Central Division.....	416	10,506	373	7,669
West South Central Division.....	1,699	25,913	1,620	22,016
West Region.....	955	17,781	958	15,874
California.....	561	9,831	586	8,679

Table 6. PRODUCTION AND SHIPMENTS OF HYDROGEN (TOTAL), BY GEOGRAPHIC AREA: 1981 AND 1980

(Production and quantity in mil. cu. ft.; value in thousands of dollars)

Geographic area	1981			1980		
	Production	Shipments		Production	Shipments	
		Quantity	Value		Quantity	Value
Total.....	103,278	49,756	166,601	106,562	50,667	139,387
Northeast Region.....	6,059	2,722	20,035	6,892	3,319	18,150
North Central Region.....	7,085	3,749	19,167	7,203	3,518	16,867
South Region and West Region.....	90,134	43,885	127,399	92,467	48,380	104,370
East South Central Division.....	4,608	1,569	4,940	4,707	1,662	4,481
West South Central Division.....	73,926	34,842	89,852	74,851	34,924	74,089

Table 7. PRODUCTION AND SHIPMENTS OF NITROGEN (TOTAL), BY GEOGRAPHIC AREA: 1981 AND 1980

(Production and quantity in mil. cu. ft.; value in thousands of dollars)

Geographic area	1981			1980		
	Production	Shipments		Production	Shipments	
		Quantity	Value		Quantity	Value
Total.....	490,285	444,138	541,504	479,240	434,617	448,549
Northeast Region.....	57,817	55,490	90,083	54,110	52,382	79,409
New England Division.....	6,716	6,610	12,393	6,835	6,705	12,080
Middle Atlantic Division.....	51,101	48,880	77,690	47,275	45,677	67,329
New York.....	12,907	11,750	21,998	12,777	11,793	21,227
New Jersey.....	11,766	11,767	19,665	11,905	12,081	18,539
Pennsylvania.....	26,429	25,363	36,027	22,593	21,803	27,563
North Central Region.....	116,163	93,689	114,551	102,585	78,970	91,105
Ohio.....	22,881	21,247	29,801	19,087	17,837	24,698
Illinois.....	17,666	17,446	29,932	15,489	12,405	20,632
South Region.....	268,967	248,399	243,042	278,871	260,345	201,345
South Atlantic Division.....	51,378	45,226	53,309	57,057	50,474	46,101
West Virginia.....	18,463	12,479	13,589	18,078	11,613	9,736
East South Central Division.....	37,477	33,778	35,669	32,479	31,375	29,393
Tennessee.....	9,737	7,351	8,937	7,023	6,979	6,958
Alabama.....	21,044	20,858	22,806	18,577	18,489	18,414
West South Central Division.....	180,112	169,395	154,064	189,335	178,496	125,851
Texas.....	136,917	131,170	113,956	142,403	135,804	89,016
West Region.....	47,338	46,560	93,828	43,674	42,920	76,690
Mountain Division.....	10,144	10,113	21,921	8,152	8,145	17,068
Pacific Division.....	37,194	36,447	71,907	35,522	34,775	59,622
California.....	34,349	33,606	64,048	32,870	32,129	52,397

Table 8. PRODUCTION AND SHIPMENTS OF OXYGEN (TOTAL), BY GEOGRAPHIC AREA: 1981 AND 1980

(Production and quantity in mil. cu. ft.; value in thousands of dollars)

Geographic area	1981			1980		
	Production	Shipments		Production	Shipments	
		Quantity	Value		Quantity	Value
Total.....	430,610	388,252	608,071	430,977	381,256	496,312
Northeast Region.....	48,804	47,720	82,691	49,566	48,612	76,075
New England Division.....	1,705	1,690	5,549	1,645	1,698	4,930
Middle Atlantic Division.....	47,099	46,030	77,142	47,921	46,914	71,145
New York.....	9,406	9,103	15,072	10,865	10,658	15,664
New Jersey.....	3,373	3,372	8,662	2,870	2,875	7,515
Pennsylvania.....	34,320	33,555	53,408	34,186	33,381	47,966
North Central Region.....	146,586	131,254	194,571	139,474	123,880	170,178
Ohio.....	36,585	36,297	48,818	34,173	34,146	44,932
Michigan.....	20,308	10,867	17,707	19,420	10,912	15,908
South Region.....	202,010	176,900	270,020	210,823	178,046	195,971
South Atlantic Division.....	44,183	43,216	54,277	41,662	40,737	49,851
East South Central Division.....	31,745	30,199	55,500	29,499	27,822	36,664
West South Central Division.....	126,082	103,485	160,243	139,662	109,487	109,456
Texas.....	87,875	78,380	120,011	101,864	84,777	84,241
West Region.....	33,210	32,378	60,789	31,114	30,718	54,088
Mountain Division.....	15,027	14,665	23,908	13,783	13,396	20,683
Pacific Division.....	18,183	17,713	36,881	17,331	17,322	33,405
California.....	14,617	14,148	25,301	14,590	14,578	22,624

Table 9. PRODUCTION OF SPECIFIED INDUSTRIAL GASES, BY MONTH: 1981 AND 1980

(Production in mil. cu. ft., except where otherwise noted)

Code	Product	Year	Total	January	February	March	April	May	June	July	August	September	October	November	December
28132 --	Acetylene.....	1981	5,161	506	431	463	430	416	407	407	368	447	412	403	471
		1980	5,493	509	507	494	471	433	432	373	422	475	492	394	491
28132 11	Produced for compression, including cylinder and pipeline.....	1981	1,413	138	115	131	114	109	106	108	189	113	127	112	131
		1980	1,410	144	148	143	116	107	97	91	94	108	133	108	121
28132 21	Produced for pipeline shipment, (excluding that produced to be compressed) and for consumption in this plant.....	1981	3,748	368	316	332	316	307	301	299	259	334	285	291	340
		1980	4,083	365	359	351	355	326	335	282	328	367	359	286	370
28133 01	Carbon dioxide: Gas (short tons) ¹	1981	3,725,331	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
		1980	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
28133 02	Liquid (short tons) ²	1981	3,471,686	267,203	238,195	271,174	308,050	284,398	302,465	344,245	312,788	298,326	306,612	274,938	263,292
		1980	2,656,305	196,940	189,850	195,880	200,966	213,905	244,029	247,138	256,753	247,529	221,019	224,854	217,442
28133 31	Solid (short tons).....	1981	341,059	25,795	22,021	24,056	28,675	29,772	32,497	35,795	33,135	28,569	29,401	25,320	26,023
		1980	348,360	25,324	22,602	25,732	24,759	26,971	34,249	35,107	34,096	35,232	32,749	26,864	24,675
28135 00	Nitrogen.....	1981	490,285	40,598	38,736	41,707	40,490	42,257	40,832	41,343	41,343	41,668	41,985	39,646	39,680
		1980	479,240	38,766	39,379	40,115	38,812	40,546	36,099	37,880	36,032	41,108	43,985	44,020	42,498
28135 11	Gas: Produced for pipeline shipment....	1981	309,027	27,098	25,085	26,467	25,505	26,078	25,543	25,773	25,650	25,864	25,863	24,686	25,415
		1980	316,228	26,568	26,722	26,566	26,081	27,051	23,554	24,677	21,108	27,070	29,018	29,687	28,126
28135 13	Produced for consumption in this plant.....	1981	40,199	3,409	3,100	3,583	3,628	3,943	3,534	3,179	2,895	3,764	3,349	2,660	3,155
		1980	39,928	3,306	3,134	3,165	3,179	3,440	2,769	3,121	3,425	3,473	3,565	3,613	3,738
28135 21	Liquid: Produced for bulk shipment to pipeline or to other air separation plants.....	1981	9,125	812	785	740	840	844	(D)	(D)	(D)	632	753	859	515
		1980	7,132	518	559	518	615	690	565	585	672	514	709	672	515
28135 23	Produced for consumption in this plant.....	1981	3,665	245	274	231	293	290	(D)	(D)	(D)	332	298	313	311
		1980	3,134	257	318	347	218	261	230	232	267	261	240	263	240
28135 41	Liquid and gas, produced for cylinder and bulk delivery.....	1981	128,269	9,034	9,492	10,686	10,224	11,102	10,577	11,375	11,569	11,076	11,722	11,128	10,284
		1980	112,818	8,117	8,646	9,519	8,719	9,104	8,981	9,265	10,560	9,790	10,453	9,785	9,879
28136 00	Oxygen.....	1981	430,610	36,340	33,585	37,872	36,970	38,726	36,495	36,965	34,999	35,727	37,314	33,397	32,220
		1980	430,977	39,378	39,043	39,441	37,854	36,243	30,433	29,259	32,889	33,527	36,924	37,370	38,616
28136 11	Gas, produced for pipeline shipment.	1981	308,094	25,428	22,855	26,390	25,544	27,121	26,336	27,022	25,547	26,139	27,405	24,736	23,571
		1980	307,181	29,384	28,038	27,918	27,380	26,206	21,011	20,134	23,420	23,623	25,871	26,216	27,980
28136 21	Liquid produced for bulk shipment to pipeline or to other air separation plants.....	1981	(³)	(³)	(³)	(³)	(³)	(³)	(³)	(³)	(³)	(³)	(³)	(³)	(³)
		1980	(³)	(³)	(³)	(³)	(³)	(³)	(³)	(³)	(³)	(³)	(³)	(³)	(³)
28136 31	Liquid and gas: Produced for cylinder and bulk delivery shipment.....	1981	80,671	6,278	6,376	6,990	6,934	7,318	6,653	6,825	6,953	6,656	7,351	6,496	5,841
		1980	74,092	5,490	6,647	7,059	6,549	6,286	5,743	5,432	5,592	5,723	6,577	6,805	6,189
28136 41	Produced for consumption in this plant.....	1981	41,845	4,634	4,354	4,492	4,492	4,287	3,506	3,118	2,499	2,932	2,558	2,165	2,808
		1980	49,704	4,504	4,358	4,464	3,925	3,751	3,679	3,693	3,877	4,181	4,476	4,349	4,447
28137 15	Argon, high purity produced for cylinder and bulk delivery and pipeline shipments and for consumption in this plant.....	1981	8,039	589	626	737	643	748	669	675	670	658	728	668	628
		1980	7,895	672	674	663	674	636	563	523	626	667	744	761	692
28137 20	Hydrogen.....	1981	103,278	8,805	9,632	8,720	8,763	8,887	8,641	8,694	7,792	8,935	8,429	7,809	8,171
		1980	106,562	9,024	9,426	9,364	9,279	8,997	8,378	7,625	7,414	8,743	8,590	9,595	10,127
28137 21	Produced for cylinder and bulk delivery shipment.....	1981	11,593	925	938	1,125	865	1,163	980	1,043	884	864	886	903	1,017
		1980	11,731	995	866	1,193	1,054	1,003	896	875	860	930	996	1,046	1,017
28137 31	Produced for pipeline shipment and Government use.....	1981	38,235	3,262	3,357	3,095	3,166	3,152	3,303	3,291	3,334	3,376	2,986	3,036	2,877
		1980	39,522	3,202	3,488	3,485	3,311	3,497	3,232	3,000	2,710	3,323	3,118	3,569	3,587
28137 41	Produced for consumption in this plant.....	1981	53,450	4,618	5,337	4,500	4,732	4,572	4,358	4,360	3,574	4,695	4,557	3,870	4,277
		1980	55,309	4,827	5,072	4,686	4,914	4,497	4,250	3,750	3,844	4,490	4,476	4,980	5,523

(D) Withheld to avoid disclosing figures for individual companies. (NA) Not available.

¹See footnote 1, table 1.²See footnote 2, table 2.³Data for liquid oxygen produced for bulk delivery shipment are combined with liquid and gas oxygen produced for cylinder and bulk delivery shipment to avoid disclosing figures for individual companies.

Table 10A. NUMBER OF ESTABLISHMENTS REPORTING THE PRODUCTION OF SELECTED INDUSTRIAL GASES, BY STATE: 1981

State	Acetylene	Carbon dioxide			Nitrogen	Oxygen	Argon (refined)	Hydrogen	Nitrous oxide
		Gas	Liquid	Solid					
United States.....	192	53	66	38	325	184	109	113	8
New England.....	5	-	1	1	13	3	2	2	-
Maine.....	-	-	-	-	1	-	-	-	-
New Hampshire.....	-	-	-	-	-	-	-	-	-
Vermont.....	-	-	-	-	1	-	-	-	-
Massachusetts.....	3	-	1	1	4	2	1	1	-
Rhode Island.....	1	-	-	-	1	-	-	-	-
Connecticut.....	1	-	-	-	6	1	1	1	-
Middle Atlantic.....	19	-	5	2	48	29	18	7	-
New York.....	5	-	2	-	12	6	4	1	-
New Jersey.....	5	-	-	2	9	3	2	2	-
Pennsylvania.....	9	-	3	-	27	20	12	4	-
East North Central.....	34	6	8	7	61	38	22	27	1
Ohio.....	11	1	4	2	23	16	9	10	1
Indiana.....	7	1	2	1	9	5	4	2	-
Illinois.....	6	3	4	4	17	11	6	10	-
Michigan.....	6	-	-	-	10	5	3	5	-
Wisconsin.....	4	1	-	-	2	1	-	-	-
West North Central.....	16	9	11	4	17	6	2	5	2
Minnesota.....	2	2	1	-	2	2	1	-	-
Iowa.....	4	2	6	3	4	-	-	-	-
Missouri.....	2	2	1	1	8	4	1	3	1
North Dakota.....	-	-	-	-	-	-	-	-	-
South Dakota.....	3	-	-	-	-	-	-	1	-
Nebraska.....	1	1	-	-	-	-	-	1	1
Kansas.....	4	2	3	-	3	-	-	1	1
South Atlantic.....	28	7	9	5	50	21	12	15	1
Delaware.....	-	1	2	-	2	2	1	4	-
Maryland.....	2	-	-	-	5	2	2	-	-
District of Columbia.....	-	-	-	-	-	-	-	-	-
Virginia.....	3	-	2	1	2	2	-	2	-
West Virginia.....	4	-	-	-	13	4	2	4	-
North Carolina.....	4	2	-	-	8	3	1	1	-
South Carolina.....	2	-	-	-	10	4	2	1	-
Georgia.....	4	3	2	1	4	2	2	3	1
Florida.....	9	1	3	3	6	2	2	-	-
East South Central.....	15	7	7	1	38	18	10	17	2
Kentucky.....	4	1	1	-	10	5	2	5	-
Tennessee.....	6	4	3	1	15	4	3	8	1
Alabama.....	3	2	1	-	11	7	5	3	-
Mississippi.....	2	-	2	-	2	2	-	1	1
West South Central.....	35	17	10	6	52	40	23	25	-
Arkansas.....	1	1	1	-	1	1	1	-	-
Louisiana.....	5	4	3	1	14	10	3	7	-
Oklahoma.....	2	3	1	1	4	2	1	-	-
Texas.....	27	9	5	4	33	27	18	18	-
Mountain.....	18	1	6	6	14	12	6	2	-
Montana.....	3	1	-	-	-	1	-	-	-
Idaho.....	2	-	-	-	1	1	-	-	-
Wyoming.....	1	-	1	-	-	-	-	-	-
Colorado.....	3	-	-	1	3	3	1	1	-
New Mexico.....	2	-	1	1	1	1	1	-	-
Arizona.....	3	-	2	2	5	3	2	1	-
Utah.....	3	-	2	2	4	3	2	1	-
Nevada.....	1	-	-	-	-	-	-	-	-
Pacific.....	22	6	9	6	32	17	14	13	2
Washington.....	4	1	1	1	3	3	3	1	-
Oregon.....	4	-	1	-	2	-	-	1	-
California.....	11	5	6	4	25	12	10	8	2
Alaska.....	1	-	-	-	-	-	-	-	-
Hawaii.....	2	-	1	1	2	2	1	3	-

- Represents zero.

Table 10B. NUMBER OF ESTABLISHMENTS REPORTING THE PRODUCTION OF SELECTED INDUSTRIAL GASES, BY STATE: 1980

State	Acetylene	Carbon dioxide			Nitrogen	Oxygen	Argon (refined)	Hydrogen	Nitrous oxide
		Gas	Liquid	Solid					
United States.....	196	(NA)	(NA)	(NA)	320	187	104	115	9
New England.....	5	(NA)	(NA)	(NA)	13	3	3	2	-
Maine.....	-	(NA)	(NA)	(NA)	1	-	-	-	-
New Hampshire.....	-	(NA)	(NA)	(NA)	-	-	-	-	-
Vermont.....	-	(NA)	(NA)	(NA)	1	-	-	-	-
Massachusetts.....	3	(NA)	(NA)	(NA)	4	2	2	1	-
Rhode Island.....	1	(NA)	(NA)	(NA)	1	-	-	-	-
Connecticut.....	1	(NA)	(NA)	(NA)	6	1	1	1	-
Middle Atlantic.....	20	(NA)	(NA)	(NA)	49	29	17	7	-
New York.....	5	(NA)	(NA)	(NA)	11	5	4	1	-
New Jersey.....	5	(NA)	(NA)	(NA)	9	3	2	2	-
Pennsylvania.....	10	(NA)	(NA)	(NA)	29	21	11	4	-
East North Central.....	36	(NA)	(NA)	(NA)	60	40	21	30	1
Ohio.....	13	(NA)	(NA)	(NA)	22	18	9	10	1
Indiana.....	7	(NA)	(NA)	(NA)	8	5	4	3	-
Illinois.....	6	(NA)	(NA)	(NA)	18	11	5	11	-
Michigan.....	6	(NA)	(NA)	(NA)	10	5	3	6	-
Wisconsin.....	4	(NA)	(NA)	(NA)	2	1	-	-	-
West North Central.....	16	(NA)	(NA)	(NA)	16	7	2	5	2
Minnesota.....	2	(NA)	(NA)	(NA)	2	3	1	-	-
Iowa.....	4	(NA)	(NA)	(NA)	3	-	-	-	-
Missouri.....	2	(NA)	(NA)	(NA)	8	4	1	3	1
North Dakota.....	-	(NA)	(NA)	(NA)	-	-	-	-	-
South Dakota.....	3	(NA)	(NA)	(NA)	-	-	-	-	-
Nebraska.....	1	(NA)	(NA)	(NA)	-	-	-	1	-
Kansas.....	4	(NA)	(NA)	(NA)	3	-	-	1	1
South Atlantic.....	30	(NA)	(NA)	(NA)	49	20	12	15	1
Delaware.....	-	(NA)	(NA)	(NA)	2	2	1	4	-
Maryland.....	2	(NA)	(NA)	(NA)	5	2	2	-	-
District of Columbia.....	-	(NA)	(NA)	(NA)	-	-	-	-	-
Virginia.....	3	(NA)	(NA)	(NA)	2	2	-	2	-
West Virginia.....	5	(NA)	(NA)	(NA)	13	4	2	4	-
North Carolina.....	4	(NA)	(NA)	(NA)	8	3	1	1	-
South Carolina.....	2	(NA)	(NA)	(NA)	9	3	2	1	-
Georgia.....	5	(NA)	(NA)	(NA)	4	2	2	3	1
Florida.....	9	(NA)	(NA)	(NA)	6	2	2	-	-
East South Central.....	16	(NA)	(NA)	(NA)	38	19	10	17	3
Kentucky.....	4	(NA)	(NA)	(NA)	10	5	2	5	-
Tennessee.....	7	(NA)	(NA)	(NA)	15	4	3	8	2
Alabama.....	3	(NA)	(NA)	(NA)	11	8	5	3	-
Mississippi.....	2	(NA)	(NA)	(NA)	2	2	-	1	1
West South Central.....	33	(NA)	(NA)	(NA)	49	40	21	24	-
Arkansas.....	1	(NA)	(NA)	(NA)	1	1	1	-	-
Louisiana.....	5	(NA)	(NA)	(NA)	13	10	3	7	-
Oklahoma.....	2	(NA)	(NA)	(NA)	4	2	1	-	-
Texas.....	25	(NA)	(NA)	(NA)	31	27	16	17	-
Mountain.....	18	(NA)	(NA)	(NA)	13	11	5	2	-
Montana.....	3	(NA)	(NA)	(NA)	-	1	-	-	-
Idaho.....	2	(NA)	(NA)	(NA)	1	1	-	-	-
Wyoming.....	1	(NA)	(NA)	(NA)	-	-	-	-	-
Colorado.....	3	(NA)	(NA)	(NA)	3	3	1	1	-
New Mexico.....	2	(NA)	(NA)	(NA)	1	1	1	-	-
Arizona.....	3	(NA)	(NA)	(NA)	4	2	1	-	-
Utah.....	3	(NA)	(NA)	(NA)	4	3	2	1	-
Nevada.....	1	(NA)	(NA)	(NA)	-	-	-	-	-
Pacific.....	22	(NA)	(NA)	(NA)	33	18	13	13	2
Washington.....	4	(NA)	(NA)	(NA)	3	3	3	1	-
Oregon.....	4	(NA)	(NA)	(NA)	2	-	-	1	-
California.....	11	(NA)	(NA)	(NA)	26	13	10	8	2
Alaska.....	1	(NA)	(NA)	(NA)	-	-	-	-	-
Hawaii.....	2	(NA)	(NA)	(NA)	2	2	-	3	-

- Represents zero. (NA) Not available.

DESCRIPTION OF SURVEY

Scope of Survey—This survey covers firms manufacturing selected industrial gases. Excluded from this survey are data for liquified petroleum gases and organic gases, which are reported to the International Trade Commission, and sulfur dioxide and chlorine, which are included in Current Industrial Reports Series MA-28A, *Inorganic Chemicals*.

Survey Methodology—The statistics in this publication were collected by mail on Bureau of the Census annual Form MA-28C, Industrial Gases. The survey panel includes all known producers of industrial gases, approximately 760 establishments. For 1981, approximately 50 establishments, which produce carbon dioxide as a by-product, were added to this survey. They were previously omitted in error. For 1981, they account for approximately 75 percent of carbon dioxide gas production and 15 percent of carbon dioxide liquid production. Data for years prior to 1981 were not requested; therefore, information for 1981 for carbon dioxide gas and liquid are not comparable to prior years.

Reliability of Data—Survey error may result from several sources: (1) inability to obtain information about all cases in the survey, (2) response errors, (3) definitional difficulties, (4) differences in the interpretation of questions, (5) mistakes in recording or coding the data obtained, and (6) other errors of collection, response, coverage, and estimation for missing data. These nonsampling errors also occur in complete censuses. Although no direct measurement of the biases due to nonsampling errors has been obtained, precautionary steps were taken in all phases of the collection, processing, and tabulation of the data in an effort to minimize their influence.

A major source of bias in the published estimates is due to imputing data for nonrespondents, for late reporters, and for data which fail logic edits. Missing figures are imputed based on yearly movements shown by reporting firms. Imputation generally is limited to a maximum of 5 percent for any one data cell. Figures with imputation rates greater than 5 percent are footnoted.

The imputation rate is not an explicit indicator of the potential error in published figures due to nonresponse because the actual yearly movements for nonrespondents may or may not closely agree with the imputed movements. The range of difference between the actual and imputed figures is not precisely known, but is assumed to be small. The degree of uncertainty regarding the accuracy of the published data increases as the percentage of imputation increases. Figures with imputation rates above 15 percent should be used with caution.

Revisions to Previous Period Data—Statistics for previous years may be revised as the result of corrected data from respondents, late reports for which imputations were made as described above, or other corrections. Figures which have been revised by more than 5 percent from previously published figures are indicated by footnotes.

Revisions include changes to prior period data resulting from reconciliation of the results of this survey with the 1980 Annual Survey of Manufactures to correct differences in reported data between the two series and to identify and verify new establishments included in the scope of this survey.

Adjustment for Price Change—All dollar figures included in this publication are in current dollars; i.e., they have not been adjusted for price change.

EXPLANATION OF TERMS

Quantity and Value of Shipments—The figures on quantity and value of shipments represent physical shipments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale. The value represents the net sales price, f.o.b. plant, to the customer or branch to which the products are shipped, net of discounts, allowances, freight charges, and returns. Shipments to a company's own branches are assigned the same value as comparable sales to unaffiliated customers; i.e., the value includes an appropriate allocation of company overhead and profit. Products bought and resold without further manufacture are excluded.

Production—Data shown for production represent total quantity of each chemical produced, including quantity consumed in plants, and for sale or transfer to other plants or warehouses of the same company. The statistics presented in the tables provide an up-to-date measure of activity in the inorganic field, but do not necessarily indicate amounts entering the market. In some cases, figures are included for material produced "in process" as an intermediate to the end of products.

Unit of Measure—All figures included in this report are shown in million cubic feet, 70°F, at 1 atmosphere pressure, unless otherwise specified.

Carbon Dioxide

Gas—Includes all gas produced that is not vented, regardless of whether it will be used as a gas or to make liquid or solid. Also includes natural CO₂ produced from well operations. Excludes amounts produced and consumed in the manufacture of urea or soda ash.

Hydrogen—Excludes amounts produced and consumed in the manufacture of synthetic ammonia, synthetic methanol, petroleum products (hydrocracking and hydrotreating), and amounts produced by the ammonia dissociation process (cracking of ammonia).

Nitrogen/Oxygen—Excludes amounts produced and consumed in the manufacture of synthetic ammonia and ammonia derivatives.

HISTORICAL NOTE

Data on industrial gases have been collected by the Bureau of

the Census since 1941. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library. A list of these libraries may be obtained from the Bureau of the Census regional offices:

Office	Telephone
Atlanta, Georgia	(404) 881-2271
Boston, Massachusetts	(617) 223-2327
Charlotte, North Carolina	(704) 371-6142
Chicago, Illinois	(312) 353-6251
Dallas, Texas	(214) 767-0625
Denver, Colorado	(303) 234-3924
Detroit, Michigan	(313) 226-7742
Kansas City, Kansas	(816) 374-4601
Los Angeles, California	(213) 824-7317
New York, New York	(212) 264-3860
Philadelphia, Pennsylvania	(215) 597-4920
Seattle, Washington	(206) 442-7080

RELATED REPORTS

The Bureau of the Census also publishes the following related reports:

Series	Frequency	Title
<i>Current Industrial Reports</i>		
M28A	Monthly	<i>Inorganic Chemicals</i>
M28B	Monthly	<i>Inorganic Fertilizer Materials</i>
M28C	Monthly	<i>Industrial Gases</i>
MA-28A	Annually	<i>Inorganic Chemicals</i>
MA-28B	Annually	<i>Sulfuric Acid</i>
<i>Other Industry Reports</i>		
M3-1	Monthly	<i>Manufacturers' Shipments, Inventories, and Orders</i>

Series	Frequency	Title
(AS)	Annually	<i>Annual Survey of Manufactures (ASM)</i>
(MC)	Quinquennially	<i>Census of Manufactures</i>

Foreign Trade Reports

FT410	Monthly	<i>U.S. Exports—Schedule E—Commodity by Country</i>
FT135	Monthly	<i>U.S. General Imports—Schedule—A Commodity by Country</i>

CONTACTS FOR DATA USERS

Subject Area	Contact	Phone Number
Current Industrial Report MA-28C	Carole Ambler	(301) 763-5911
Foreign Trade publications	Juanita Noone	(301) 763-5140
Census/ASM	Allen Foreman	(301) 763-5531
To order a Census Bureau publication	Customer Services (DUSD)	(301) 763-4100
Bureau of Industrial Economics	Philip Lewis	(202) 377-0128

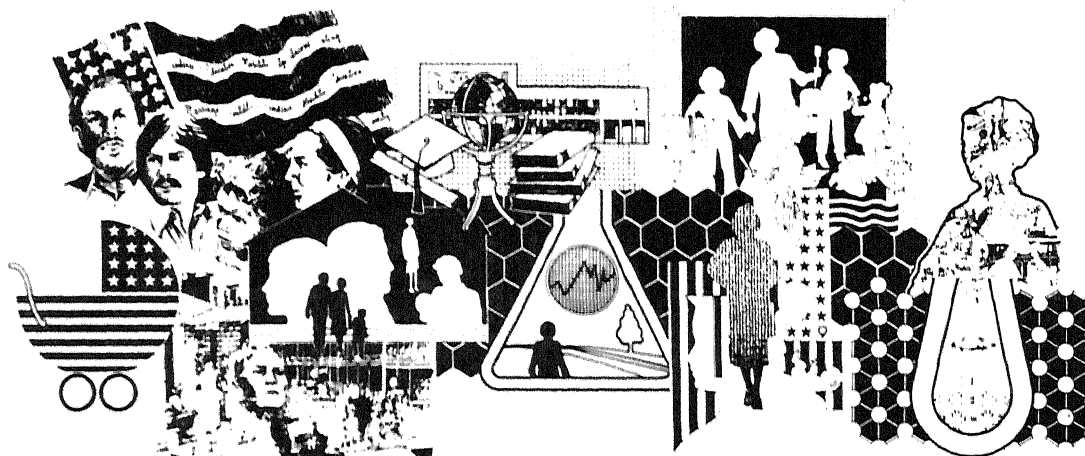
ACKNOWLEDGEMENTS

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Series listed in the index are:

- P-20 Population Characteristics
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- P-26 Federal-State Cooperative Program for Population Estimates
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